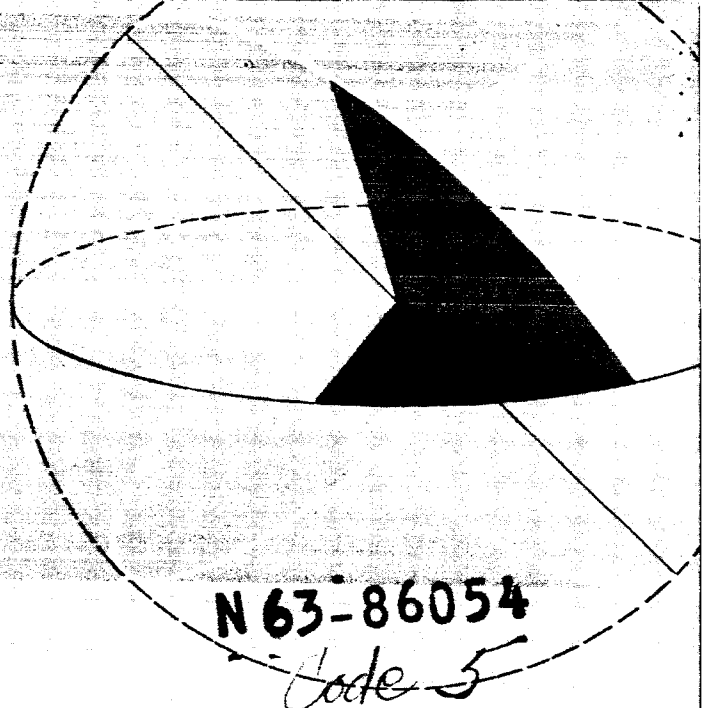


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TRANSLATION NO. 19

**FOURTH SOVIET
SPACESHIP-SATELLITE**



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JET PROPULSION LABORATORY

California Institute of Technology

Pasadena, California

April 1, 1961

SOVIET SPACESHIP-SATELLITE IV

PRAVDA, March 10, 1961

TASS Communique

In accordance with the program for the exploration of cosmic space, on March 9, 1961, the Soviet Union injected its fourth spaceship-satellite, into orbit around the Earth. The weight of the spaceship-satellite was 4700 kg not including the weight of the last stage of the carrier rocket.

The orbit of the spaceship-satellite was very close to that calculated: a perigee of 183.5 km, an apogee of 248.8 km from the surface of the Earth, and an orbital inclination of 64° 56' toward the equatorial plane.

The principal purpose of this launching was further testing of the construction of the spaceship-satellite and the systems which would assure necessary conditions for a manned flight.

A cabin with an experimental animal (the dog "Chernushka") and other biological objects, as well as telemetry and television systems, a radio system for trajectory measurements, and a radio-communication complex was installed aboard the spaceship-satellite. The instruments aboard the spaceship operated normally during the flight.

After completing the assigned investigation program, the spaceship-satellite was returned the same day by a command from Earth and landed in a predesignated area of the Soviet Union.

A preliminary examination of the returned spaceship indicated that the experimental animal was behaving in a normal manner.

As a result of the launching of the Soviet's fourth spaceship-satellite and its successful return to Earth, valuable data were obtained on the operation of the structure of the spaceship and its systems, as well as on the effects which flight conditions had on live organisms.

A study and processing of the obtained data is being conducted at the present time. The biological objects that completed this flight are being observed.

A GREAT ACHIEVEMENT

by

Kh. Koshtoyants
Member Correspondent of Soviet Academy of Sciences
per PRAVDA, March 10, 1961, p. 3.

Once again a spaceship blasted off toward the unlimited realms of space carrying aboard live inhabitants of Earth. After the completion of the designated exploration program, this spaceship returned to Earth the same day and landed, in response to a command, in a predesignated area of the Soviet Union.

Following the first famous astronauts (Belka and Strelka), who returned safely to Earth, was the dog, Chernushka, who this time made the long trip into space. In addition to the dog, the special cabin aboard the spaceship contained other biological objects. An extensive and well planned program of medical biological investigations is being conducted in conjunction with flights of spaceship-satellites.

Repeated investigations in the field of space biology and medicine are essential in preparing for the ultimate objective, manned flights into space. This repetition is advisable for many reasons. First of all, the program for medical biological investigations provides for the study of not only the immediate effect of numerous and

unusual factors on the organisms of live beings, but also their effect on the future life of these organisms. This pertains to the effects of cosmic radiation, as well as other types of radiation, at the time of exposure and also to future effects including the effect on heredity. It can therefore be said that the first group of live beings, headed by the dogs Strelka and Belka, which have completed cosmic flights are very valuable to science as objects of continuous and very important observations.

It is a known fact that, for a manned flight into space, it is necessary to investigate many medical-biological problems, the solution of which requires new experiments. Included in these also are experiments on the investigation of simple plant life. These plants serve as agents which help to solve the important problems of fool-proof oxygen supplies to the hermitically sealed cabins and regeneration of air; that is, to utilize the carbon monoxide which was discharged by the astronauts.

Experiments with these plants will examine the possibility of utilization of refuse of the organisms, particularly of products of a nitrogen exchange, by means of biological synthesis of whole value albumin products. It might well be that this is one of the most important problems, since, in the future, man will undertake space flights which will last many months and maybe years.

Of equal importance for the success of cosmic medical-biological investigations is the further perfection of the techniques of radio-television, and radio-telemetry complexes. The accuracy of observations and the reliability of conclusions will depend on the perfection of these techniques. For instance, as radio-television instruments become more perfect, scientists on Earth will be able to see in detail the behavior of animals inside the cabin of the spaceship-satellite. This is very

important during the final evaluation of these objective indicators of the condition of organisms (activity of heart, blood pressure, temperature, and others) which are registered and transmitted to Earth by corresponding radio-telemetry installations. Soon, the entire world will not only follow the flight of the first man-astronaut by means of communique's and bulletins, but also visually on the screens of television receivers.

The mission of the new, fourth spaceship-satellite was to check the complex installations which were designed to provide those conditions inside the hermetically sealed cabin which are necessary for a normal life activity of organisms for future manned flights.

It is too early to evaluate the results of that new medical-biological experiment with the fourth cosmic ship. However, it is certain that this experiment has yielded sufficient conclusive information to complete the experiment which was undertaken with the previous soviet spaceship-satellites. Soviet science has made a reality flights of live beings into space with the guarantee of a safe return to Earth and landing on a predesignated area of the Soviet Union. We are aware of the great responsibility of the decisive act, of sending a man into space and returning him safely. We are certain that the first astronaut to circle the Earth in a spaceship will be a man from the Soviet Union.



Fig. 1. Chernushka--Passenger on the
Spaceship-Satellite

ON THE THRESHHOLD OF MANNED FLIGHTS INTO SPACE

by

N. Barabashov

Academician of the Ukrainian Academy of Sciences,
Chairman of Planetary Commission of the Astronomical Council
PRAVDA, March 12, 1961

From the territory of our country, the fourth Soviet spaceship-satellite was launched into space. The spaceship achieved its precalculated orbit and the same day,

following a command from Earth, it returned to our Planet and accomplished a safe landing at a predetermined point in the Soviet Union.

The weight of this spaceship was 4,700 kg. The principal purpose of this experiment was to test the construction of the spaceship-satellite and the systems which were installed aboard the satellite for the purpose of securing the necessary conditions for a manned flight into space.

For the purpose of studying the effect of a cosmic flight on live organisms, the fourth spaceship-satellite carried in its cabin a dog, named Chernushka, and other biological objects. As a result of this launching, new valuable data were obtained on the construction of the spaceship itself and on the operation of its technical equipment, as well as on the effect of cosmic flight conditions on live organisms. After its return from that space trip, the dog Chernushka behaved in a normal manner.

The launching of the fourth spaceship-satellite marks a new step towards man's conquest of space. It has been established that the presence inside a cosmic ship and a flight at cosmic velocities in interplanetary space did not cause any significant changes in the activities of the organisms of Belka and Strelka, which returned from a trip aboard the second spaceship-satellite. These dogs are still enjoying fine health.

However, there are many problems which must be solved before a man will actually undertake a trip into interplanetary space aboard a large spaceship. For this reason, before a man is placed in orbit around the Earth, a number of experiments are being conducted with animals aboard spaceships. The greatest difficulty of such a flight, re-entry and safe landing, is now being solved successfully. Only after these very complicated but entirely necessary experiments are conducted, will a man

equipped with everything necessary for maintaining his normal life and activities undertake such a journey. The first astronaut will have at his disposal complicated and accurate instruments with which he will send to Earth new significant results on the investigation of cosmic space, the Sun and the planets of the solar system, as well as stars and distant astral clouds.

Observations from aboard a cosmic ship will be very productive since there is no atmosphere in space which, to a great degree, disturbs visibility from Earth. Also, beyond the realms of the Earth's atmosphere, there will be no dispersed light which is always present in the Earth's atmosphere and which hides the reflection of weak cosmic objects.

At this time, I would like to take a look into the future and imagine how the penetration of a man into space will develop.

After orbiting the Earth, a man will undoubtedly travel over new cosmic roads toward the Moon, Venus, and Mars. A man will land on the Moon and will personally investigate all information which we have obtained about our natural satellite with the help of observations from Earth. In this manner, the first man to land on the Moon will completely unveil the mysteries of that cosmic body which is closest to us.

The next step will be to construct special astronomical observatories on the lunar surface for the purpose of a deeper investigation of space. The Moon will also serve as a springboard for further flights deep into space. Plants for the assembly of huge spaceships will be set up on the Moon. This is logical since the gravitational force of the Moon is 6 times smaller than the Earth's gravitation, and, consequently, in order to leave the Moon, a spaceship will have to develop a velocity of only 2.4 km per sec instead of 8 km per sec, as is the case on the surface of the Earth.

After the conquest of the Moon and the establishing of normal travel on the route Earth-Moon man will undertake journeys to the planets Venus and Mars.

EARTH-COSMOS-EARTH

PRAVDA, March 12, 1961

As was already reported, the fourth spaceship-satellite which was launched into orbit around the Earth on March 9, 1961 landed successfully in a predesignated area of the Soviet Union. Aboard the spaceship-satellite was located a cabin which housed the dog Chernushka. The basic purpose of this new scientific experiment was to test further the construction of the spaceship-satellite and the systems which will assure necessary conditions for a future manned flight into space.

A correspondent of Pravda has asked the Soviet Academy of Sciences to explain how the instruments and installations aboard the spaceship-satellite have operated during the entire duration of the experiment; that is, from launching until the successful landing. He also asked how the four-legged astronaut, the dog Chernushka, behaved during the flight.

In reply, a representative of the Soviet Academy of Sciences made the following statement:

Preliminary processing of telemetry information, which was obtained from aboard the Soviet's fourth spaceship-satellite, has shown that all instruments and automatic devices aboard the spaceship operated normally during its orbital flight and during the process of its re-entry and landing, and have assured a successful accomplishment of the desired flight program.

The normal functioning and the desired mode of operation of systems which assured the maintenance of conditions necessary for a normal life activity inside the spaceship were confirmed.

At proper times and in necessary order, the separations of the spaceship-satellite from the last stage of the carrier rocket took place, the alignment of the antennas aboard the spaceship into an operational position, the activation of the orientation system, the turning on and off of the automatic devices during the re-entry sector and the spaceships landing on Earth.

The thermal regulation system has maintained the temperature inside the spaceship within the limits of $+16$ to $+20^{\circ}\text{C}$. Humidity inside the spaceship was from 37 to 40%.

During the duration of flight, the construction of the spaceship ensured the necessary air tightness. Air pressure inside the spaceship was 760 to 770 mm Hg.

The dog Chernushka aboard the spaceship was behaving in a normal manner during the entire duration of the flight and descent to Earth. Immediately after the spaceship-satellite entered its orbit, the pulses of Chernushka was 120; breathing frequency was 50-60.

A TASS correspondence has received the following announcement from the Soviet Academy of Sciences:

The dog Chernushka, as well as the black mice, guinea pigs, insects, and other biological objects which were aboard the spaceship, were delivered to Moscow.

At the present time, all biological objects are under laboratory conditions and subjected to a thorough observation and investigation. The dog Chernushka has withstood the space flight in an excellent manner. Results of preliminary examinations of

the dog have not shown any deviations from normal. The guinea pigs, mice, and other live organisms are also in perfect condition. Results of radio-telemetry registration of physiological and hygienic data, which were obtained from aboard the spaceship, were subjected to decoding and analysis. The flight of a variety of live organisms aboard the spaceship-satellite fulfilled the aim to obtain new additional data about the effect of various factors during the flight on the life activity and condition of physiological functions of live organisms, as well as to explain immediate and future effects of such a flight.

The injection of the fourth spaceship-satellite in orbit around the Earth and its successful landing are additional proof of perfection of Soviet science and rocket technique, a new important step on the road toward further study of cosmic space.

Each new experiment in that direction brings closer the moment when a man will be able to undertake a trip into space.